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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/814,618	03/22/2001	Alain Coulombe	9555.112US01	3957

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EXAMINER

COUSO, YON JUNG

ART UNIT PAPER NUMBER

2625

DATE MAILED: 01/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No. ✓

09/814,618

Applicant(s)

COULOMBE ET AL.

Examiner

Yon Couso

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-14 and 24 is/are allowed.
- 6) ☐ Claim(s) 15 and 18-23 is/are rejected.
- 7) ☒ Claim(s) 16 and 17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 8/18/05, 12/1/05.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 15 and 18-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hori (US Patent No. 5,608,529) in view of Moser et al (US Patent No. 5,909,270).

As to claims 15 and 22, Hori teaches an optical system for measuring the relief of an object, the system comprising: a pattern projecting assembly for simultaneously projecting at least three phase-shifted patterns onto the object (column 5, lines 43-52); each of the projected patterns being characterized by a predetermined bandwidth (column 5, lines 56-60). Even though Hori does not teach details on pixels and computer system to manipulate the data to measure the three-dimensional relief of an object, it is well-known in the art that the once the image is obtained by the CCD's, the image data can be fed to the computer and the processing can be achieved in the

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computing system, such as computing the object phase for each pixel using the at least three object intensity values for the corresponding pixel and computing the relief of the object at each pixel position using the object phase at the corresponding pixel position. Moser discloses a system in figure 5, where CCD camera is connected to a frame grabber and a system controller. Given the references at the time the invention was made, it would have been obvious to one of ordinary skill in the art to incorporate a frame grabber and a system controller to process the data obtained from the CCD's in the Hori's optical system because it is well-known in the art that the process can be performed in the hardware environment or software environment. Therefore, Hori in view of Moser teaches an image acquisition apparatus sensitive to the predetermined bandwidths for taking an image of each of the at least three phase-shifted projected patterns on the object (Hori: column 5, lines 53-65 and Moser: figure 5); each of the images including a plurality of pixels having intensity values (Hori: inherent to the image obtained from CCD and Moser: figure 5); and a controller configured for: receiving from the image acquisition apparatus at least three images of the projected patterns onto the object (Hori: column 5, line 66-column 6, line 7 and Moser: figure 5); computing the object phase for each pixel using the at least three object intensity values for the corresponding pixel and computing the relief of the object at each pixel position using the object phase at the corresponding pixel position (Hori: column 6, line 10-63 and Moser: figure 5).

As to claim 18, Hori teaches that the image acquisition apparatus includes at least one camera sensitive to the predetermined bandwidths (column 5, lines 53-65).

As to claim 19, Moser teaches the computer includes memory means for storing the images during their process (582 in figure 5).

As to claim 20, Moser teaches the computer includes at least one of a storage device, an input device and an output device (figure 5).

As to claim 21, Hori teaches lead-co planarity inspection (column 6, lines 45-67).

As to claim 23, Hori teaches at least three images are taken simultaneously (figure 1).

2. Claims 16 and 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

3. Claims 1-14 and 24 are allowed.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yon Couso whose telephone number is (571) 272-7448. The examiner can normally be reached on Monday through Friday from 8:30 to 5:00.

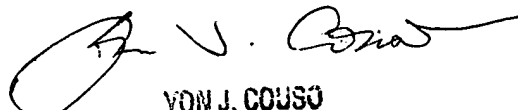
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta, can be reached on (571) 272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

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you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

YJC



VON J. COUSO
PRIMARY EXAMINER

December 23, 2005